

WHAT IS CLAIMED IS:

- 1 1. A method of locating a mobile terminal in a mobile communications
2 network, the method comprising the steps of:
3 detecting when said mobile terminal has entered a new roaming area, said new
4 roaming area being comprised of two or more location areas, each of said two or more
5 location areas being comprised of one or more cells;
6 obtaining roaming area information of said new roaming area;
7 storing said roaming area information in a database; and
8 primary paging said mobile terminal within said new roaming area using said
9 roaming area information stored in said database.
- 1 2. The method according to claim 1, wherein said new roaming area is
2 within a current mobile switching center service area.
- 1 3. The method according to claim 2, wherein said step of storing includes
2 sending a update subscriber data message having said roaming area information to said
3 database.

1 4. The method according to claim 3, wherein said update subscriber data
2 message is based on a mobile applications protocol.

1 5. The method according to claim 3, further comprising receiving an
2 update subscriber acknowledgment or negative acknowledgment message from said
3 database.

1 6. The method according to claim 1, wherein said new roaming area is
2 within a new mobile switching center service area.

1 7. The method according to claim 6, wherein said step of storing includes
2 sending a subscriber data request message having said roaming area information to said
3 database.

1 8. The method according to claim 7, wherein said subscriber data request
2 message is based on a mobile applications protocol.

1 9. The method according to claim 1, further comprising retrieving said
2 stored roaming area information from said database.

1 10. The method according to claim 9, wherein said retrieving step includes
2 receiving a subscriber data message including said stored roaming area information
3 from said database.

1 11. The method according to claim 10, wherein said subscriber data
2 message is based on a mobile applications protocol.

1 12. The method according to claim 9, wherein said retrieving step includes
2 receiving a terminating call routing message including said stored roaming area
3 information from said database.

1 13. The method according to claim 12, wherein said terminating call
2 routing message is based on a mobile applications protocol.

3 14. The method according to claim 12, wherein said roaming area
4 information is subsequently included in an initial address message of an ISUP message.

1 15. The method according to claim 1, wherein said roaming area
2 information includes a roaming area identity.

1 16. The method according to claim 1, wherein said roaming area
2 information includes a location area identity.

1 17. The method according to claim 1, wherein said database includes a
2 home location register.

1 18. The method according to claim 1, wherein said database includes a
2 guest location register.

1 19. The method according to claim 1, wherein said database includes a
2 mobile switching center/visitor location register.

1 20. The method according to claim 1, wherein said step of detecting
2 includes detecting when said mobile terminal enters a new location area, said new
3 location area being associated with said new roaming area.

1 21. The method according to claim 20, wherein said new location area is
2 within the middle of said new roaming area.

1 22. A system for locating a mobile terminal in a mobile communications
2 network, comprising:

3 a mobile switching center adapted to detect when said mobile terminal has
4 entered a new roaming area and to obtain a roaming area information of said new
5 roaming area, said new roaming area being comprised of two or more location areas,
6 each of said two or more location areas being comprised of one or more cells ; and

7 a database connected to said mobile switching center and configured to store
8 said roaming area information; wherein

9 said mobile switching center is further adapted to issue a primary page for said
10 mobile terminal within said new roaming area using said roaming area information
11 stored in said database.

1 23. The system according to claim 22, wherein said mobile terminal is
2 already known in a service area of said mobile switching center.

1 24. The system according to claim 23, wherein said mobile switching center
2 is further adapted to send a update subscriber data message including said roaming
3 area information to said database.

1 25. The system according to claim 24, wherein said update subscriber data
2 message is based on a mobile applications protocol.

1 26. The system according to claim 24, wherein said database is further
2 configured to send an update subscriber acknowledgment or negative acknowledgment
3 message to said mobile switching center.

1 27. The system according to claim 22, wherein said mobile terminal is new
2 in a service area of said mobile switching center.

1 28. The system according to claim 27, wherein said mobile switching center
2 is further adapted to send a subscriber data request message including said roaming
3 area information to said database.

1 29. The system according to claim 28, wherein said subscriber data request
2 message is based on a mobile applications protocol.

1 30. The system according to claim 23, wherein said database is further
2 configured to send said stored roaming area information back to said mobile switching
3 center.

1 31. The system according to claim 30, wherein said stored roaming area
2 information is sent back to said mobile switching center in a subscriber data message.

1 32. The system according to claim 31, wherein said subscriber data
2 message is based on a mobile applications protocol.

1 33 The system according to claim 22, wherein said database sends said
2 roaming area information to a transit mobile switching center via a terminating call
3 routing message.

1 34. The system according to claim 33, wherein said terminating call routing
2 message is based on a mobile applications protocol.

1 35. The system according to claim 33, wherein said roaming area
2 information is subsequently included in an initial address message of an ISUP message.

1 36. The system according to claim 22, wherein said database sends said
2 roaming area information to a gateway mobile switching center via a terminating call
3 routing message.

1 37. The system according to claim 36, wherein said terminating call routing
2 message is based on a mobile applications protocol.

1 38. The system according to claim 36, wherein said roaming area
2 information is subsequently included in an initial address message of an ISUP message.

1 39. The system according to claim 22, wherein said roaming area
2 information includes a roaming area identity.

1 40. The system according to claim 22, wherein said roaming area
2 information includes a location area identity.

1 41. The system according to claim 22, wherein said database includes a
2 home location register.

1 42. The system according to claim 22, wherein said database includes a
2 guest location register.

1 43. The system according to claim 22, wherein said database is said mobile
2 switching center.

1 44. The system according to claim 22, wherein said mobile switching center
2 detects when said mobile terminal enters a new location area, said new location area
3 being associated with said new roaming area.

1 45. The system according to claim 44, wherein said new location area is
2 within the middle of said new roaming area.